

# A CONNECTION DEVICE ASSOCIATED WITH AN ARM OF AN ARTICULATED THREE-DIMENSIONAL MEASURING APPLIANCE

This application is entitled to the benefit of and incorporates by reference essential subject matter disclosed in French Patent Application No. 03 012674 filed on October 29, 2003.

## FIELD OF THE INVENTION

**[0001]** The present invention relates to a connection device associated with an arm of an articulated three-dimensional measuring appliance.

## BACKGROUND OF THE INVENTION

**[0002]** There exist very numerous patent documents illustrating structures for articulated three-dimensional measuring appliances including a plurality of joint axes. Thus, recent measuring appliances have up to six axes.

**[0003]** Reference can be made to documents US—A—5 402 582, US—A—5 611 147, US—A—5 794 356, and US—A—5 926 782. In general, articulated three-dimensional measuring appliances conventionally comprise a moving assembly rigidly secured to a jointed end of an arm and mounted in the tubular body of the arm to turn about the longitudinal axis of said arm, and a fixed assembly mounted to the other end of the arm, together with connection means for providing an electrical link between the two assemblies.

**[0004]** More recently, it has been found advantageous to improve the conventional structures of articulated measuring appliances so that the operator can cause at least one of the arms to turn through several revolutions about its central axis. However, articulated three-dimensional measuring appliances are conventionally fitted in each arm with an angle coder enabling rotation about the corresponding axis to be measured. Consequently, the desire for a very large range of rotation, or even an infinite range of rotation, requires a solution to the problem of providing a connection to establish the electrical link between the fixed elements and the moving elements.

**[0005]** In this respect, reference can be made to documents US—A—4 888 877, US—A—4 593 470, and DE—A—41 40 294.

**[0006]** More recently, arrangements have been developed making use of rotary connectors with circular tracks, using technology that is already well known in couplings for machine members, so as to achieve a range of rotation that can be considered as being infinite. In this respect, reference can be made

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